

1. A package for optical micro-mechanical devices,

comprising

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a die comprising one or more optical micro-mechanical devices on a first surface of a substrate, the first surface including a die reference surface;

a package frame comprising an aperture and a package frame reference surface proximate the aperture adapted to receive the die reference surface such that the optical micro-mechanical devices are located in the aperture;

one or more optical interconnect alignment mechanisms terminating adjacent to the aperture are positioned relative to an optical interface reference plane; and

distal ends of one or more optical interconnects located in the optical interconnect alignment mechanisms and optically coupled with one or more of the optical micro-mechanical devices.

- 2. The apparatus of claim 1 wherein the optical interface reference plane comprises the die reference surface.
- 3. The apparatus of claim 1 wherein the optical interface reference plane comprises the package frame reference surface.
- 4. The apparatus of claim 1 wherein the optical interface reference plane comprises the plane parallel to the die reference surface located between the die reference surface and the package frame reference surface.
 - 5. The apparatus of claim 1 wherein the optical interconnect alignment mechanisms comprise V-grooves located in the package frame reference surface.

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6. The apparatus of claim 1 wherein the optical interconnect alignment mechanisms comprise V-grooves located in the die reference surface.

	7. The apparatus of claim 1 wherein the optical interconnect				
	alignment mechanisms are located in both the package frame reference surface				
	and the die reference surface.				
	8. The apparatus of claim 1 wherein the optical interconnects				
	comprise a tangential relationship with the optical interface reference plane.				
	9. The apparatus of claim 1 wherein a first portion of an				
	optical interconnect is positioned on one side of the optical interface reference				
	plane and a second portion of the optical interconnect is positioned on another				
	side of the optical interface reference plane.				
	10. The apparatus of claim 1 wherein at least one of the optical				
	interconnects contacts the die.				
	11. The apparatus of claim 1 wherein the optical interconnects				
	terminate adjacent to the die without contacting the die.				
	12. The apparatus of claim 1 wherein the optical interconnect				
	comprises one of an optical fiber and optical fiber.				
	13. The apparatus of claim 12 wherein the lens optically				
	couples the optical fiber with one or more optical micro-mechanical devices.				
	14. The apparatus of claim 12 wherein the lens contacts the				
	die.				
	15. The apparatus of claim 12 wherein the lens terminates				
	1.1				

adjacent to the die without contacting the die.

rear surface of the die.

pads interposed between the die reference surface and the package frame reference surface. 5 17. The apparatus of claim 16 comprising a contact pad on the die reference surface and a contact pad on the package frame reference surface. 18. The apparatus of claim 16 wherein the contact pad electrically couples one or more optical micro-mechanical devices with external 10 electrical contacts. 19. The apparatus of claim 16 wherein the contact pad electrically couples one or more optical micro-mechanical devices with a flexible circuit member. 15 20. The apparatus of claim 16 wherein the contact pad electrically couples one or more optical micro-mechanical devices with contact pads located on the package frame reference surface. 20 21. The apparatus of claim 1 wherein the aperture comprises a rectangular shape. 22. The apparatus of claim 1 wherein the aperture comprises a complex shape. 25 23. The apparatus of claim 1 wherein the aperture comprises a cross-shape configured so that the distal ends of the optical fibers terminate in arms of the cross-shaped aperture without contacting the die.

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The apparatus of claim 1 comprising one or more contact

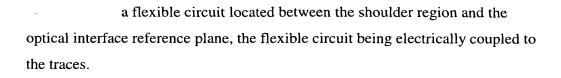
The apparatus of claim 1 comprising a tooling fixture on a

devices to the shoulder region; and

		25.	The apparatus of claim 24 wherein the tooling fixture	
	comprises a tooling post.			
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	1	26.	The apparatus of claim 24 wherein the tooling fixture	
	comprises a he	eat sink.		
		27.	The apparatus of claim 1 comprising an encapsulating	
	material sealing the die to the package frame.			
		28.	The apparatus of claim 1 comprising a cover sealing the die	
	to the package frame.			
		29.	The apparatus of claim 1 wherein the aperture comprises a	
	cover.			
ς.		30	The apparatus of claim 1 comprising a flexible circuit	
7	electrically co			
	,			
		31.	The apparatus of claim 1 comprising electric traces on the	
	,		ectric traces electrically coupled to contact pads in the	
	package frame reference surface.			
		32.	The apparatus of claim 1 comprising:	
		a flexil	ble circuit extending across a rear surface of the die;	
		one or	more vias extending through the die and electrically	
coupling the optical micro-mechanical dev			nicro-mechanical devices to the flexible circuit.	
	/			
	/	33.	The apparatus of claim 1 comprising:	
	1	a shou.	lder region adjacent to the optical micro-mechanical	
	devices;			

electrical traces extending from the optical micro-mechanical

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one or more alignment posts positioned to engage with the die reference surface; and

a cavity adjacent to the alignment posts on a side opposite the aperture.

35. The apparatus of claim 34 comprising a flexible circuit extending through the cavity electrically couples with contact pads on the die reference surface.

36. The apparatus of claim 34 comprising an adhesive located in the cavity sufficient to retain the die to the alignment posts.

37. The apparatus of claim 1 comprising an optical
20 communication system including at least one packaged optical micro-mechanical device.